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THE BANFFSHIRE NATURALIST.

OUR old friend, Samuel Smiles, now a veteran in literature, who has been indefatigable in writing of the power of Self-help, has, as one of his late exploits, narrated in a most amusing and instructive manner the *Life of a Scotch Naturalist*, Thomas Edward, who at an advanced age modestly occupies the position of a working shoemaker in Banff. This is a curious and interesting book. Few persons would have taken the trouble that Mr Smiles has done to narrate the efforts in pursuit of a knowledge of Nature of so very obscure and poor a man as is the hero of his remarkable biography. The thing is altogether unique. Nothing but vast kindness of heart, along with the pleasure of shewing what can be done by constant self-denial and industry, could have influenced the benevolent writer. As probably not many of our readers have yet had an opportunity of seeing the work—a beautifully embellished duodecimo of four hundred pages, published by John Murray, London—we shall try to give a sort of abridged history of the now famed Scotch naturalist, with such observations as occur to us.

Thomas Edward, born in 1814, is the son of a private in the Fifeshire militia, who on the breaking up of his regiment, resided for a short time at Kettle, his native place in Fife, and then, for the sake of work as a handloom weaver, settled with his wife and child at Aberdeen. Here the boy was brought up in the usual rough way experienced by the humbler class of Scotch children. He ran about barefooted, was poorly fed, and required pretty much to find his own amusement. His parents, while willing to do their best for him, soon found that he was far from being easily managed. He was intractable, and in a very strange way. While still a child, he demonstrated an extraordinary love of animals of all kinds. He took delight in dogs, cats, pigs, hens, birds of every kind, and every description of small creatures, down to bees, beetles, flies, spiders, and so on—in fact, any living thing he could lay hold of; even rats and mice did not

come amiss. This idiosyncrasy considerably puzzled and vexed the father and mother. Not understanding him, he was scolded and cuffed, but all to no use. The boy was moved by a predominant passion, amounting to a species of mania. When asked what he meant by his eccentricities, he said he could not tell. His love of Nature was an unconquerable instinct.

Tam Edward, as he was ordinarily called, was thought to be in some degree out of his senses. At from four to five years of age he was sent to a dame's school, but did not long continue at it; for being found to have a kae or jackdaw in his pocket, that caused some trouble, he was summarily dismissed by the schoolmistress. Another school received him, and here ensued a similar catastrophe. The teacher was plagued beyond endurance by his bringing all kinds of disagreeable little creatures to school. On one occasion he brought with him a bottleful of horse-leeches which he had gathered in a neighbouring pool. All went on smoothly until one of the leeches escaping, crawled up a boy's leg, and a fearful commotion ensued. Telling the culprit to take his bottle of leeches and begone, the schoolmaster turned Tam to the door, at the same time bringing down the taws so heavily upon him that he thought his back was broken. Another school was tried; but there he was worse used. One morning the master felt something creeping on his arm, which shaking from him proved to be a centipede. Edward was at once called up and accused of bringing the creature to the school. The charge was quite erroneous, for he had not done so. His denial was unavailing, and by the enraged teacher he was beaten in a most unjust and unmerciful manner. Finally, he told the poor boy to take his slate and books and go about his business. Thus he was expelled from his third and last school. Disgusted with the cruel treatment he had received, he positively refused to go to any other school. So there, at six years of age his education ended. He could read, knew a little of arithmetic—nothing of writing and grammar. He had already acquired somewhat idle habits vagrandising in quest of

animals, but he was honest, exceedingly truthful, and by no means indisposed to work for a livelihood. For about two years he was employed at a tobacco-work at a short distance from the town. This was a happy time, for in going to and returning from his labour in the factory, he had pleasant rambles in the woods and plantations, which afforded opportunities for picking up a knowledge of birds, insects, wild-flowers, and plants, the like of which he had never seen before.

It was a hapless thing that this eagerly inquiring child had no one to direct him in a way likely to be useful. His father and mother had no sympathy for his love of nature. All they cared about was to have him apprenticed to some regular trade, by which he would gain his living. At length they succeeded in apprenticing him to a shoemaker, named Begg, who proved to be a dissolute drunken vagabond, very ill qualified to teach the boy his business. Tam, however, learnt to make upper-leathers, and was proceeding to make shoe-bottoms, when all went wrong on the discovery that he brought boxes of butterflies and such like to the workshop; the sight of them usually throwing Begg into a rage. Doubtless, it was indiscreet to bring his pet animals with him; but there ought to have been allowances on account of his youth, as well as from the fact that he never spent a moment of his master's time on his amusements. One afternoon, when waiting till his master came in to allow him to go to dinner, and while he had no work to do, he amused himself with a young sparrow which he had taught to do a number of little tricks. The master, entering in a drunken fury, struck Edward such a blow as laid him flat on the floor, and then trampled the bird with his foot. Picking up the poor and innocent creature, Tam found it was still breathing. He put it tenderly in his bosom, and went home crying over the unprovoked outrage. Shewing the mangled and dead bird to his mother, he said he did not care so much for himself, if only the bird had been spared, adding that 'if Begg struck him again without a cause, he would certainly run away. She strongly remonstrated against this, because, being bound apprentice for six years, he must serve out his time, come what would.'

Persuaded to return to the shoemaker's shop, young Edward struggled on till three years of his wretched apprenticeship had passed over. Then, there was a climax. The boy had brought three young moles ensconced in his bonnet. Begg, now more drunken than ever, discovered the moles, killed them on the spot, knocked down his apprentice with a last, dragged him to the door and threw him into the street. A good deal hurt, Edward resolved he would no longer serve under such a monster. And he kept his word. Begg threatened the terrors of the law; but, perhaps, conscious of his brutality, he did nothing. For a time the youth was a kind of loose waif. He thought of being a sailor, but could get no one to take him to serve on board a ship. He had an uncle at

Kettle in Fife; and without telling any one, he went off to walk all the way to Kettle, a distance of about a hundred miles, living on morsels of bread he had in his pocket, and sleeping at night among whins or under the shelter of a haystack. All the money he possessed was sixpence, which was just sufficient to pay his fare in the ferry-boat across the Tay. But how was he to pay a pontage of a penny to cross the Esk at Montrose? That was a distressing consideration, yet he would not beg, nor would he break in upon the sixpence for the ferry. He tried again and again to sell his pocket-knife for a penny, and only succeeded in doing so when he came in sight of the bridge. The toil and privation endured in the journey were fruitless. The uncle, a mean-spirited wretch, would do nothing for him, and sent him back to Aberdeen with a present of eighteen-pence to pay his expenses on the road.

The parents of Thomas Edward were glad to see him again, for they were afraid he was lost. By their advice he procured work in making shoes of a light kind, his new employer being of a kindlier nature than Begg. In this situation, and at another shoemaking concern, he completed his knowledge of the craft, which, however, he never liked, and stuck to it only as a means of livelihood. As a kind of interlude in his occupation, he enlisted in the Aberdeenshire Militia in 1831. For the period he served as a soldier he acquitted himself creditably. His only escapade consisted in having on one occasion quitted the ranks while on drill to try to catch a butterfly which struck his fancy. It was a grave military offence; but at the intercession of some ladies with the officer on duty, was passed over lightly. When Edward was about twenty years old, he left Aberdeen with his father and mother to reside in Banff, a much smaller town, where his chances of advancement were materially lessened. The removal was a blunder, and entailed on the young naturalist a life-long depression of circumstances. Situated on the shore of the Moray Firth, where that fine estuary expands into the German Ocean, Banff is doubtless favourably adapted for explorations in Natural History. Edward was so far highly favoured, but the poor fellow had to live by his daily manual labour, and unfriended as well as unsympathised with in this remote sea-side town, there was no prospect of improving his position.

Good or bad, here Edward was fixed; and how, in the midst of daily toils and cares, he found time to accumulate a vast store of knowledge concerning animals and plants, is truly wonderful. Some may think he made a mistake in marrying when no more than twenty-three years old. But his wife was a sensible, prudent woman, and gave him a happy home. 'Mutual affection,' as our author observes, 'makes up for much.' Perhaps they occasionally felt the bitterness of poverty, for Edward's earnings did not yet amount to more than about nine shillings and sixpence a week!

With nothing but the most elementary education,

without books, without advisers, the young shoemaker made up for everything by immense diligence, by sobriety, and a keen disregard of personal inconvenience. In his assigned hours of labour he worked hard. He never spent a moment idly. He never entered a public-house, nor drank anything stronger than water. In his expenditure he was rigorously economical. All his spare time was devoted to his favourite pursuit, that of acquiring a knowledge of animals by painstaking practical inquiry. When he began these inquiries, he did not even know the correct names of the animals he sought for, because he had no books and nobody to tell him. He was a thoroughly original student of nature. He learned everything by personal observation. Nothing but a degree of enthusiasm amounting to fanaticism could have impelled him to endure cold, wet, hunger, want of sleep, in order to add to his stock of facts. His fellow-shoemakers jeered at him for not joining in their vicious and costly indulgences; but he held on his way. There, we think, was manifested his heroic, his noble struggle—not that he ever esteemed it to be a struggle, for he only followed the bent of a simple self-sacrificing character; but his conduct in this respect was not less worthy of admiration.

Whatever were the sacrifices made by Edward, he was compensated, as an intense lover of Nature. Describing his tastes and pursuits, Mr Smiles says: 'Everything that lived and breathed had charms for him. He loved the fields, the woods, the moors. The living presence of the earth was always about him, and he eagerly drank in its spirit. The babbling brooks, the whispering trees, the aspects of the clouds, the driving wind, were all sources of delight. . . . He felt himself free amidst the liberty of Nature. . . . As his wanderings were almost invariably conducted at night, he had abundant opportunities of seeing not only the ocean, but the heavens in their various aspects. What were these stars so far off in the sky? Were they worlds? Were they but the outposts of the earth, from which other worlds were to be seen, far beyond the ken of the most powerful telescope? To use Edward's own words: "I can never succeed in describing my unbounded admiration of the works of the Almighty; not only the wonderful works which we ourselves see upon earth, but those countless orbs which roll both near and far in the endless immensity of space—the Home of Eternity. Everything that moves or lives, everything that grows, everything created or formed by the hand or will of the Omnipotent, has such a fascinating charm for me, and sends such a thrill of pleasure through my whole frame, that to describe my feelings is utterly impossible."

Early in the spring of 1838, Edward began to form a collection of specimens in natural history, for which he taught himself to stuff and prepare the animals he was able to secure. In his researches he was aided by an old gun, which he had bought for four-and-sixpence. Sallying out at nine o'clock at night, when his day's work was over,

with his gun and some insect boxes and bottles, and putting a piece of oat-cake in his pocket for supper, he scoured the country as long as it was daylight for any living thing that came in his way. 'When it became so dark that he could no longer observe, he dropped down by the side of a bank, or a bush, or a tree, whichever came handiest, and there he dozed or slept until the light returned. Then he got up, and again began his observations, which he continued until the time arrived when he had to return to his daily labour.' On Saturday evenings he returned home by twelve o'clock, so as not to encroach on the weekly day of rest. On Monday mornings he contrived to have a few hours' observation before six o'clock. As he was known to live soberly and honestly, there was no suspicion that he was either a poacher or a burglar, yet these nocturnal ramblings were incomprehensible. People at length gave him up as an oddity. Gamekeepers did not think of molesting him in his explorations. Occasionally, he took up his quarters for the night in a ruined castle, in some disused building, a sand-hole or cavern amidst the rocks by the sea-shore, the shelter of a table-shaped gravestone in a churchyard, or anywhere. This was a most dismal mode of spending the night; for independently of exposure to the weather, he was liable to be visited by polecats, weasels, badgers, or other wild animals sniffing about him. There was, however, always a chance of catching moths and other creatures that flutter or roam about in the dark. Sometimes he was bitten on the hands by weasels and rats during his disturbed sleep, and on one occasion he had a tremendous encounter with a polecat. When morning broke, he had excellent opportunities of studying the habits of the skylark, blackbird, thrush, and other early choristers.

By these assiduous labours he had, by 1845, collected two thousand specimens, consisting of quadrupeds, birds, reptiles, fishes, crustacea, starfish, zoophytes, corals, sponges, and other objects. He assorted the whole in cases made from old tea-boxes, fashioned by his own hands, and which he neatly papered and glazed. With some pride, he made a public exhibition of his collection at a local fair; and by it not only paid his expenses, but had something over for future purposes. This measure of success induced him to exhibit his collection at Aberdeen. Although advertised, and spoken favourably of by the newspapers, the exhibition was a failure. There was no rush of visitors, as Edward fondly expected. In fact, the exhibition did not nearly pay expenses. Dreading the horror of being in debt, he offered the collection for sale; and in desperation accepted an offer of twenty pounds ten shillings for the whole of what had cost him eight years' labour exclusive of outlay. The gentleman who bought this very fine collection unfortunately stored the specimens in a damp room, and the whole went to ruin. So ended this unfortunate enterprise. Aberdeen and Banff shires lost an opportunity of not only helping a most deserving man of genius, but of acquiring a splendid collection illustrative of the natural history of the two counties.

Though terribly crushed, on returning to his home in Banff, he went to work at his usual trade of making the lighter kinds of women's shoes, in which he was reputed to excel. Then, he resumed his researches by the sea-shore, and in

a short time began a new collection of specimens. Suddenly he met with a grievous accident. He rolled down a rocky precipice a depth of forty feet, falling on his gun, which was smashed to pieces, and receiving such bodily injuries as confined him for weeks to the house. To support his family during his illness, he was under the necessity of selling a portion of his newly formed collection.

About this time, Edward had the good fortune to attract the attention of the Rev. James Smith, of the parish of Montquhitter, a place a few miles from Banff. This gentleman having a strong love of natural history, and possessing a good collection of books, did an important service in offering hints to Edward, and in lending him books to enable him to define and classify various animals which he caught. So instructed he began to write observations on natural objects, which appeared in the *Banffshire Journal*. Afterwards, at the suggestion of Mr Smith, he sent papers to the *Zoologist*, the *Naturalist*, and the *Linnean Journal*, through which channels his name and qualities as a writer became known to naturalists generally. The result was a considerable private correspondence, and an enlargement of his knowledge regarding the names and species of animals, but with no improvement in circumstances—rather the reverse, for being ever on the brink of starvation, the expense for paper and postage stamps pressed severely on his resources. Yet, he willingly gave such information as he possessed to all who requested his assistance. Considering Edward's meagre education and his inexperience of literary composition, his papers, of which some extracts are given by Mr Smiles, strike us with surprise. Besides being correctly written, they have all the elegance and graphic force of Audubon. How, by those scientific inquirers, who had the best means of judging of his talents, Edward should have been suffered to drag on existence at a mechanical employment which never seems to have yielded him twenty shillings a week, is not very easily understood. No doubt, he was shy in pushing himself forward. He had none of the saliency of character which through devious adventure leads to fortune; but these palliatives scarcely explain the strange neglect which he experienced.

Nobly, but still obscurely struggling on, a great misfortune befell Edward in the death of Mr Smith in 1854. There, a true friend was gone. As some assuagement of his loss, he found a friend and counsellor in the Rev. Mr Boyd, parish minister of Crimond, whose hospitable manse was always open to him when he visited the neighbourhood. But ere long, Mr Boyd died suddenly, and here was a fresh and agonising bereavement. By 1858, Edward had accumulated a large and splendid collection, but at the cost of his health and strength. 'He had used himself so hardly; he had spent so many of his nights out of doors in the cold and wet; he had been so tumbled about amongst the rocks; he had so often, with all his labours, to endure privation, even to the want of oatmeal—that it is scarcely to be wondered at if, at that time, his constitution should have begun to shew marks of decay.' There was a fever and illness of a month, which led to a fresh sale of articles in his collection; and on getting well, he was distinctly told by his medical attendant 'that

if he did not at once desist from his nightly wanderings, his life would not be worth a farthing.' From this time, making fewer pulls on his constitution, he more particularly devoted himself to investigations along the sea-shore, capturing rare fish, crustacea, and zoophytes.

In these sea-side researches he was considerably aided by one of his daughters, who poking about among fishing villages, procured the refuse material brought up by nets, in which many most interesting small animals new to science were discovered. From the stomachs of cod-fish he procured innumerable specimens of animals which had been voraciously swallowed. By these and other means he gained no little celebrity for his additions to a knowledge of the myriads of creatures which inhabit the depths of the ocean. Twenty-six new species of crustacea were discovered by himself alone in the Moray Firth.

Some honours—none of them of any value in a money point of view—were now awarded to Edward. The Linnean Society having discovered his genius and talent, unanimously elected him an Associate in 1866. Immediately afterwards, the Natural History Society of Aberdeen unanimously admitted him a member; and in 1867 he received the diploma of the Glasgow Natural History Society. 'Although Banff,' says Mr Smiles, 'possessed an "Institution for Science, Literature, and the Arts, and for the encouragement of native genius and talent," the members did not even elect Edward an honorary member. The scientific men of Banff fought shy of the native shoemaker.'

It is pleasing to know that Thomas Edward is still in the land of the living, and though broken down in health, is cheerful, contented, and able to a certain extent for his accustomed duties. Latterly, he has in many ways derived comfort and assistance from his grown-up daughters. His searches after strange sorts of animals are at an end. He has fought the fight of science unaided, and he has fought it well. He has likewise fought the fight of poverty; for he has always lived within his means, and owes no man anything. Therein, independently of his sacrifices in behalf of science, lies the grandeur of his character. In these days, when the gospel of idleness is so eloquently preached, and so readily responded to, we should be glad if it were in our power to fix the attention of the masses on what this humble shoemaker has done by dint of self-denial and the careful economising of time. Expecting no one to make such extraordinary sacrifices, we would say: Look, ye misspenders of idle time, ye wasters of existence, ye thriftless dram-drinkers, ye vacant-minded street loungers, what was done by one as poor, if not poorer, than yourselves! All we ask is that, reflecting a little on your responsibilities, you would endeavour to take to heart the thrilling and instructive instance we have presented of A Noble Struggle!

W. C.

P.S.—Since writing the above, we have learned that a fund to succour Thomas Edward has been commenced at Aberdeen. The still more gratifying fact is announced that 'the Queen has been much interested in reading his biography by Mr Smiles, and touched by his successful pursuit of natural science under all the cares and troubles of daily toil; Her Majesty, therefore, has been graciously pleased to confer on him a pension of

fifty pounds a year.' The concluding days of the Scottish Naturalist will thus be passed in the degree of freedom from toil and anxiety which he so eminently deserves.

THE LAST OF THE HADDONS.

CHAPTER V.—'I AM LILIAN.'

I STOOD for a few moments at the window in contemplation of the beautiful view of the surrounding country, so wide and varied and well wooded; then, afraid of the sentiment which was creeping upon me again, I turned away, and set resolutely to work at unpacking. After putting my small belongings into something like order, I proceeded to make the best of myself for presentation to 'Miss Farrar.' It was the first time I had seen myself from head to foot as I now did in the large cheval glass, and I gazed not a little curiously, as well as anxiously and critically, at the *tout ensemble*. What should I look like to a lover, who I knew was an admirer of women's beauty in the way a good man can admire it? What did I look, to myself?

For the first few moments I experienced a thrill of altogether agreeable surprise. I really had no idea my figure was so good. 'Tall, *élancée*, head well shaped and well poised,' I thought, pleasantly checking off my perfections up to that point. With my face, I was far from being as well satisfied. I tried to persuade myself that it was because I was more accustomed to it, and that such familiarity breeds contempt; but is one ever familiar with one's own face? I can only say I was looking very discontentedly at mine, forgetting that the very discontent was reflecting itself.

Too much squareness about the brow, too decided a mouth and chin, and eyes—well, if they ever looked soft, as well as large and dark, I had not seen it. Then the complexion, it might do for some people, but Philip's wife ought to have more colouring and softness, more general loveliness than this. Philip's wife! She ought to be a child of light, 'beautiful with all the soul's expansion'—the expression of her face ever varying with the dainty colouring of her graceful poetic thoughts.

I was still picturing to myself the kind of woman Philip's wife ought to be, frowning the while at a dark discontented face, frowning discontentedly back at me, when the door was softly opened, and turning hastily round, my eyes fell upon a young girl standing upon the threshold.

'I beg your pardon; I do not think you heard me knock, and I could not wait. I am Lilian.'

How shall I describe Lilian Farrar? I have described her! A child of light, 'beautiful with all the soul's expansion'—the expression of her face ever varying with the dainty colouring of her graceful poetic thoughts. I need only add that she had deep-blue eyes, shaded by long lashes, straight, delicately chiselled little nose, sweet sensitive mouth, pale-brown hair, and the figure of a graceful child just merging into womanhood.

'May I come in, please?'

Might love and loveliness and youth and all that is true, and sweet, and good, come in? But I only bowed, and held out my hand with a smile.

'I am so sorry I did not know when to expect you, Miss Haddon.'

'I came earlier than I ought to have done.'

'O no; pray do not think that; only I should like to have been at the station to make friends at the beginning.'

'Let us call this the beginning.'

She drew nearer to me, and in a caressing child-like way, lifted up her mouth to be kissed, as she said: 'Welcome to Fairview.'

I am not considered to be demonstrative; but I know I kissed her as heartily as she kissed me, quite understanding that this was not like an ordinary first meeting. Then she gently impelled me towards a low chair, and knelt down beside me.

'If you could only know how very anxious I have been, and how relieved I am.'

'Relieved?' I asked, bending down to get a better view of the sweet face.

'Yes; indeed I am.'

'Then you can in a measure understand my sensations,' I replied, smiling down into her eyes.

'O yes; but you could go if you did not like us, you know.'

'And you could dismiss me if you did not like me.'

'I did not think of that; I was only afraid—companion means so much, does it not?—how hard it would be for me if I cared for you, and you only cared to be here because'—

'Of the salary I received?'

'Oh, pray do not think that I meant that. —May I say exactly what I was thinking of, Miss Haddon?'

'Pray do.'

'Then I meant that it would be bad for me if you looked down upon the Farrars, if you were ever so nice, or even if you looked down upon the Tippers. I have just seen papa, and he says you belong to great people. That rather frightened me, until I saw dear old auntie, and found that she only knew you were nice; when I began to hope.'

'I shall soon set your mind at ease about all that,' I cheerfully replied. 'Meantime, believe this much—I have begun to look up to Mrs Tipper.'

'What a nice kind thing to say, Miss Haddon.'

'What a pleasant thing to feel, Miss Farrar.'

She made a little *moue* at the 'Miss Farrar,' and I went on: 'You are very young, are you not?—younger than I expected to find you.' I was going to add for an engaged young lady, but thought it better to let the allusion to her engagement come first from her.

'Only just turned seventeen,' she replied with a little sigh.

'Is that so very depressing?'

'Dear Miss Haddon, if I may tell you about myself, we shall feel more at home with each other.'

'Tell me anything you please, my dear; and try to believe this much—you may trust me.'

'I believed that, the very first moment I looked at you. Yours is a face to trust.'

'Is it—is it?' I murmured, smoothing the hair back from her white brow. 'That is indeed something to be thankful for. And now I can ask with a clear conscience, why it is a trouble to be only seventeen?'

'Because—dear Miss Haddon, I am engaged; and

Arthur—that is his name, you know—does not like waiting until I am older, to be married. Papa says he must wait at least a year, and Arthur does not like it. Of course I should prefer waiting. I am sure we could not possibly be happier than we are now, and I should not like leaving papa—I will not, until he is quite well again—but I do not like Arthur to be disappointed either.'

'Mr Farrar told me of the engagement.'

'But I do not think that papa told you of one thing which is the very best of all. Arthur first met me at a garden-party, given by one of our neighbours, just after I came home for good; and he had not the least idea that papa was rich when he began to care for me. He liked me for myself—only for myself!' with a grave little nod at me. 'He was quite surprised when he found that I am an heiress. Do you know, he often says that he should prefer having to work for me; only, of course, that need not be.'

I read her thought, and my heart went out to Lillian Farrar, as I smilingly replied: 'He gives one that impression.'

'Do you know him?' she inquired, looking a great deal surprised.

'Enough for that, I think. Mr Wentworth, is he not?'

'Mr Wentworth!' she ejaculated. 'What made you think that? No; but Arthur is an intimate friend of Mr Wentworth's.'

I saw that I had made a mistake. But I was so much impressed in Mr Wentworth's favour, that the fact of his being an intimate friend of her lover's seemed a sufficient guarantee of the latter's claims to respect.

'They were at Eton and Oxford together, and Arthur likes him very much,' she continued, as though she, on her side, considered that was saying a great deal in Mr Wentworth's favour.

'A barrister, is he not?'

'Yes; but he has not been very successful as yet, though he works very hard—writes for newspapers and magazines; and I am sure it is very good of him, for Arthur says he was brought up in the greatest luxury by a rich uncle, and always led to believe that he would be the old man's heir. But just as he was leaving Oxford, his uncle married a young girl, and when he had children of his own, he quite discarded his nephew. But he is like Arthur, and does not care about the money; he is a great deal more troubled about having lost the old man's good-will. Arthur says that he lives in an old tumble-down house—which is all he possesses of his own—with one servant, in the poorest way, and very rarely visits anywhere but here. Even here he does not come half often enough to please us, we all like him so much. Strange that both Arthur and he should commence life with large expectations, and both find themselves penniless; is it not? Mr Trafford was unfortunate in some speculations, I believe; and the estates had to be sold after his death.'

I said something to the effect that it was fortunate that they were equal to the position. Later, I found that her lover's father had squandered his property in the worst kind of extravagance.

A gong was being sounded, and she rose, putting her hand under my arm. 'You must be wanting luncheon, Miss Haddon. Auntie said that she could not prevail upon you to take any refreshment.'

I was beginning to feel hungry, and acknowledged that I was. As she went down, she explained that her father had of late taken to invalid habits, and did not join them at table. We found only Mrs Tipper in the dining-room; a large, lofty room, furnished with the same heavy grandeur of style which had struck me in the other parts of the house. But a change had come over Mrs Tipper since I had left her. Her genial good-nature was veiled by the same stiffness and constraint which had jarred upon me at first, as she politely trusted I should find something I could eat, regretted not having known that I should arrive early, so that she might have given orders accordingly; and so forth.

'The Haddons of Haddon!' I thought. She had seen her brother, and been awed by them. But I really could not allow them to come between this dear old lady and me, and therefore replied, I had been accustomed to live so plainly that this was quite a banquet to me; as indeed it was. I saw that I lost ground a little with the man-servant in attendance by my candour; but I could afford to wait for his better appreciation. Mrs Tipper hesitated a moment, when she reached the head of the table, and signified by a gesture her wish for me to take my seat there; in fact, I know now, as I guessed then, that she was only too glad to slip out of taking any prominent position in the household. But I very decidedly shook my head, and passed down, replying to her little protest, that it was not to be thought of—it would not be right. I saw that she understood me to mean that it would not be etiquette, and sat down contented. Could the dear little lady have known it, my ignorance of the ways of the fashionable world was greater than her own. To my amusement, Mrs Tipper's superiors in such knowledge have succumbed to the magic words, 'It would not be right,' with which, knowing no other code, I have occasionally ventured to settle a question. With certain people, 'It is not right,' solely means 'It is not etiquette,' than to sin against which there is no greater wrong; and they have yielded, because they have supposed me better acquainted with the newest mode, rather than imagine that I could have the audacity to attempt innovations of my own.

I soon succeeded in making matters pleasant with Mrs Tipper again. In five minutes the Haddons of Haddon were forgotten, and we were getting through luncheon in friendly agreeable fashion. There was a slight obtuseness on Richard's side when I required anything; but he found that his forgetfulness did not in the slightest degree disturb me, nor prevent my obtaining what I wanted. I quietly waited; and as he could not let me repeat a request more than once without drawing the attention of the others to his negligence, he came at length to understand that it was just as well to do a thing at once as to be quietly forced to do it. The attention of both Lillian and her aunt was too much concentrated upon me for them to notice the man's remissness, and I did my best to prevent them seeing it. I knew that Lillian's eyes were turned upon me more than once when I was supposed to be unobservant, and thought of her words, 'Companion means so much,' with all the more respect for her judgment, whatever it might prove to be.

That we two should be friends, I knew. I

should love her, and I believed that she might come to love me. But would ours be as the companionship of two of the same age? Should I ever be able to lay bare my inmost self, living so intensely and so differently to the Mary Haddon most people knew, to this young girl? She had spoken of her love to me; should I be able to speak of mine to her—the love which was deeper and stronger than a girl's love? It was with something akin to pain that I told myself no. Because it was not the love of a girl; because it was in its heights higher and in its depths deeper; because it was in its strength and weakness so much more human at eight-and-twenty than at seventeen, I could not talk about it to Lilian Farrar. The shadowy poetic sentiment which clings about a young girl's dream, the love which is more in love with love than with the lover, was not mine. I am an old woman now, writing a story for men and women, and therefore I will add that I have still quite as much romance and enthusiasm in my composition as I had at seventeen, which is an admission to make in these days; but at eight-and-twenty I persuaded myself that they were or ought to be dead. In truth, my eight-and-twenty years were pressing upon me rather too heavily for mental health. I could not take kindly to the idea that youth was gone, or recognise that the best of me was not necessarily gone with it. But there is no need for me to analyse and dwell upon my weaknesses here; they will be apparent enough as I go on, and will doubtless preach their own moral without my assistance.

After luncheon, we returned to the pretty morning-room where I had first seen Mrs Tipper, and devoted the afternoon to making better acquaintance with each other. I began by telling my own little story (so far as it could be told, with Philip left out) about my dear mother's long illness, the struggles I had had to obtain a living when alone, and so forth, because I wished to appear in my true colours to these two, and above all, wished to get rid of the Haddons-of-Haddon tone in our future intercourse. Then dear old Mrs Tipper came out grandly with her little story respecting past ups and downs; not even omitting the fact that her deceased husband had been messenger (between ourselves, porter, my dear) in the firm where her brother rose to be chief, and how he had been pensioned by 'dear Jacob,' and ended his days in peace and comfort in a cottage of his own at Holloway, all the grandest visions of his youth realised.

Afterwards, Lilian told how her father had risen in life entirely by his own efforts; whilst her colour deepened with an equally right pride as she added that her mother had been a gentlewoman, to whose foresight her child owed the education that was something better than any her father's money alone could have purchased. As Mrs Tipper had informed me, it had been Mrs Farrar's dying wish that the first fifteen years of her child's life should be spent with an old friend and distant connection of her own. She had not erred in her judgment. Notwithstanding her naturally good disposition, Lilian would have suffered from the disadvantages consequent upon being brought up in luxury, the petted heiress of a wealthy man, instead of spending her early years at a country vicarage in wholesome study and exercise. I could understand now how it

happened that Mr Farrar's daughter was so refined and different from what might have been expected. I knew now why it gratified her so much to believe that her lover had not sought her for her money's sake. Any one but herself would have thought it natural enough that she should be sought for her own sake. How true, and good, and sweet she was, and how soon one knew it; there being no mysterious complications in her nature which it would take time to discover.

'To think of our having so dreaded the lady-companion, auntie; and to think of my having pleaded so much with papa against engaging one!' ejaculated Lilian, when, after a very pleasant afternoon, we rose to go to our rooms and dress for dinner.

'We did dread her, did we not, dear?' smilingly returned the old lady, putting her hand upon mine; 'though I had the most cause for dread.'

'Indeed you had not—your cause is mine,' very decidedly said Lilian.

That they could say so much before me was sufficient, had I not already arrived at the agreeable conclusion that I had found a home until Philip's return.

AUSTRIAN ARCTIC DISCOVERY.

At a time when the attention of this country is again being specially directed to the question of Arctic exploration, it becomes interesting to take note of what other nations have recently achieved in the region of Polar discovery. It is not too much to say that it is with justice that England considers herself in the van as yet of Arctic enterprise; but we have little hesitation in affirming that the expedition the story of which is told in the two volumes under notice,* is worthy of ranking side by side with the most memorable of our own voyages of discovery; and when it is considered that the attention of Austria has but very recently been turned to the subject of Arctic exploration, the amount of success achieved by that nation is all the more creditable.

It deserves to be stated that the expedition of the *Tegetthoff* was partly due to the munificence of a private individual, the Count Wileczek, who contributed the sum of forty thousand florins towards its equipment, besides encouraging the enterprise by every means in his power. The *Tegetthoff* was a screw-steamer of two hundred and twenty tons burden, built expressly for this expedition, with engines of one hundred horse-power, and fitted out for a voyage of two-and-a-half years' duration. Her commander was Captain Weyprecht, and with him was associated, as colleague and as director of the land operations, the writer of these volumes, Lieutenant Payer. The crew, officers and men included, numbered only twenty-four. The ideal object of the voyage was the north-east passage; its direct and expressed aim, the exploration of the seas and lands lying to the north-east of Novaya Zemlya. Where the ship was to winter was not definitely fixed; and a return home by way of Behring's Strait was, though improbable, a possibility.

The *Tegetthoff* left Bremerhaven on June 13,

* *New Lands within the Arctic Circle. Narrative of the Discoveries of the Austrian Ship Tegetthoff in the Years 1872—1874.* By Julius Payer, one of the Commanders of the Expedition. Macmillan & Co.

1872, and Tromsø a month later. Immediately previous to the voyage of the *Tegethoff*, a preliminary voyage of reconnaissance had been made in a small coasting-ship by Count Wilczek, who had found the sea between Spitzbergen and Novaya Zemlya almost entirely open and free from ice. It was hoped, therefore, that the water would be in the same condition when the *Tegethoff* crossed it, and that where a small sailing-vessel had gone so far, a fully equipped steam-ship might penetrate almost indefinitely. But to the latter vessel the Spitzbergen seas presented a wholly dissimilar aspect. The ice was first encountered in seventy-four degrees—much farther south than was expected; and from that time it never entirely left the vessel.

Off Cape Nassau the expedition was overtaken by Count Wilczek, who had followed in the *Isbjörn*, the small sailing-ship in which the preliminary pioneering voyage had been made, with the object of placing a depot for the *Tegethoff* on the north coast of Novaya Zemlya. Very shortly after the two vessels separated, the *Tegethoff* was fairly beset and hemmed in by the ice in latitude 76° 22' N., longitude 63° 3' E. The good ship had made her first and her last voyage, for from that icy grip she was destined never to get free.

Long and desperate were the efforts made by officers and men to release the ship. Sawing the ice and blasting with powder, both above and below the surface, alike proved fruitless. Fissures that had been made with great toil, froze again as soon as made; and when the vessel tried to steam against the ice, it was unable so much as to set the floe in motion. The *Tegethoff* was now entirely at the mercy of the terrible foe by which she was beset on all sides.

It might be supposed by such as are only imperfectly acquainted with the Arctic regions, that the ship thus firmly locked in the ice would be safe at least from immediate danger. But this was very far from being the case. For some time indeed, the ice by which she was encircled remained motionless, but this condition of things was not to last. The 13th of October—a Sunday—was a day ominous for the fate of the expedition. In the morning, the ice-floe burst across immediately beneath the ship. Officers and crew rushed on deck to behold the ice heaving around them on all sides. The aft-part of the vessel was already nipped and pressed; and the rudder, which was the first to meet the shock, trembled and groaned. The crew were unable to unship it by reason of its weight, and had to be satisfied with lashing it securely. All then leaped out upon the ice, and as quickly as possible got on board whatever articles had been left lying outside the ship. Next, the fissures in the floe were hastily bound together with ice-anchors and ropes, and filled up with snow, in the hope that they might freeze over, though it was felt that at any moment a sudden heave might undo the whole work.

During all this time meanwhile, the ice was tossing and trembling from its bases, while the air reverberated with the most awful sounds, as of shrieks and howls. Mountains lifted themselves suddenly above the level surface, and the low groan that rose from the depths grew into a deep rumble, and finally increased to a roar of fury with the volume of myriad voices. Uproar and confusion ruled supreme, and destruction seemed

every moment drawing nearer the ship as the ice crashed against her. Now huge blocks reared fathoms high above the vessel, forcing themselves against her hull; now masses fell down beneath her, until they began to raise her above the level of the sea, the explorers being in readiness at any moment to abandon the ship, in the event of her being crushed. The pressure approached its height at about noon, at which time the vessel was straining and groaning in every plank and spar; but the crisis had now been reached, the pressure abated, the *Tegethoff* righted herself, and all immediate danger at least, was past.

But the above terrible experience indicated to the explorers what they might at any time expect. Henceforward every noise in the ice was heard by them with apprehension and fear. It was worse than living within the continual influence of earthquakes. At night, officers and men always slept with their clothes on, ready to rush on deck whenever the ice was heard beginning to groan and heave; and this state of things continued for one hundred and thirty days, the whole of that period being one of almost constant darkness.

The first winter passed by the expedition in their icy prison was at best but a time of gloom, though all on board combined to render each other's lot as little wearisome as possible. The conduct of the crew throughout the enterprise was exemplary and praiseworthy; and it is pleasant to read of the kindly feeling and sympathy that prevailed between officers and men. Only by the maintenance of complete harmony and mutual consideration could an existence passed under the circumstances described in these volumes be rendered tolerable. The devices resorted to, to employ and pass the time, were various. Constant occupation on the part both of officers and men was found not only to be beneficial, but absolutely necessary to ward off ennui and depression. The duties connected with the daily routine of work were not sufficient; occupation had to be invented. The chief officers had their scientific observations to employ and interest them; but the resources of the men were fewer. At first the building of snow-houses was resorted to as a means of filling up the time. Then a school was begun, in which were passed many hours daily; besides which, there was seal-catching and bear-hunting. On an average, two bears were killed weekly, and roasted bear-flesh was relished by all; and the flesh of the seal, which was at first but little appreciated, was by-and-by found to be at least palatable.

It is well known that the getting-up and performance of theatricals have been found a source of great beneficial occupation and amusement during winters passed in the Arctic regions, where it is a matter of prime importance that the spirits of the men should be kept as even and jolly as possible. But there were several reasons why the crew of the *Tegethoff* were compelled to forego such recreations. Their numerical strength was too small; the languages spoken on board were too diverse; for the crew was a very mixed one, including Germans, Italians, Hungarians, and Slavs, all orders, however, being issued in Italian; and the performance must have been given in four separate languages. There was no other place available for a theatre than the barricaded deck, where the spectators would have had to sit enduring a temperature of from twenty to

thirty degrees of cold; and lastly, there was a general feeling that the situation of the party was a far too serious and critical one for such diversions to be so welcome as other Arctic expeditions have found them.

During the first winter the *Tegethoff* drifted through the wandering ice for the most part in a north-easterly direction. When a little north of seventy-four degrees, she took a turn towards the west in February 1873. Her course was now a generally westward one, but with variations. In the spring and summer of 1873 every effort was of course again put forth to free her from the ice. All endeavour in this direction, however, still proved ineffectual, and the little party again prepared, though with very anxious and depressed hearts, to face a second winter. But through the long gloom of that second winter they were to be buoyed up by hope and expectation. In August the ship took a turn northward, when suddenly, 'as if by magic,' the mists lifted, and behold! a vast shape, high, bold, and rocky, loomed out of the fog on the vessel's bows. It was land beyond a doubt, new land; and fresh hope and life filled every breast at the sight. The whole aspect of things suddenly changed for the explorers. They had now something to look forward to through the long winter—namely, the exploration of that new land which they had discovered, or as it may be said, which had discovered them.

When the land first revealed itself to the explorers, it was too late in the season to leave the ship for purposes of exploration, and so the *Tegethoff* remained close by it, still fast in the ice, all through the succeeding winter, during which one disturbing thought troubled the minds of all on board, the fear, namely, that the vessel might drift away again from the land, and all the hopes of the expedition end in nothing. But no such untoward fortune awaited them. When the spring came round, and the long darkness waned, the light revealed the land still in the same position. And now preparations began to visit the new-found land. Three separate sledge-journeys were made from the ship, all under the command of Lieutenant Payer. The first journey began early in March 1874, and was a short one. The party comprised six men and three dogs; but as Lieutenant Payer contemplated making his second journey the most important one, he reserved the pick of the crew for it. It will be understood that it required no little courage and patient endurance on the part of the handful of men engaged in this first sledge-journey across the desolate wastes of ice, when it is stated that their physical condition was very far from being perfect. 'Pospischill suffered from lung-disease; Lurkinovich from palpitation of the heart; Haller from chronic rheumatism; Lettis from a tendency to bronchial catarrh.' It is therefore all the more creditable to these men that they bore up so well, and accomplished so much, for the first sledge-expedition did all that its leader expected from it. The position of the new land and its general character were determined; Wilczek Island and the south part of Hall Island explored; and from the results thus arrived at, Lieutenant Payer was enabled to arrange a plan for a more protracted journey towards the north.

The second sledge-expedition was by far the most important of the three. It started from the

ship on the 26th of March in the thick of a snow-storm. After enduring the most excessive toil and hardship, the party penetrated northwards to a distance of one hundred and sixty miles, as far as it was possible to go with sledges. The cold endured during these sledge-journeys was often most intense. The men never dared to bring their lips in contact with a metal cup in the act of drinking. One shook the liquid into his companion's mouth. The strongest rum seemed to lose all its strength, and had the taste of milk and the consistence of oil. The bread was frozen so hard that there was danger of breaking the teeth in eating it, and it brought blood as it was being consumed. The instruments used by Lieutenant Payer in surveying burned when he touched them; and the medals worn by some of the men felt like hot iron, proving the truth of the saying that 'extremes meet.' The furthest point northward reached by Lieutenant Payer and his party was Cape Fligely, 85° 5', where the Austro-Hungarian flag was planted for the first time in the far north. Gladly would the Lieutenant have visited the lands beheld from that northern peak, could he have done so with any degree of safety. But he felt that he had gone as far as the resources at his command warranted, and wisely shrank from further risking the lives of his brave followers.

The work accomplished by the second sledge-journey was a sufficiently thorough exploration of Kaiser Franz Joseph Land—named after the Austrian emperor—and the exploration of Austria Sound, which divides Franz Joseph Land into Wilczek Land and Zichy Land. Lieutenant Payer returned to the ship well satisfied with the results achieved; and we think he had every reason for being so. He had, by careful investigations, surveys, and drawings, arrived at a very satisfactory conception of the newly discovered land.

Kaiser Franz Joseph Land is an archipelago, of about equal dimensions to Spitzbergen, extending from eighty degrees or thereabouts to at least eighty-three degrees north latitude, but how far from east to west was not determined. It is a very barren region, as may be believed, containing mountains from two to five thousand feet high, glaciers of great size, and many deep fiords. Animal life is abundant, bears and seals and Arctic birds in great variety, vast numbers being found by the explorers in many parts. No trace of human beings was anywhere discovered, and Lieutenant Payer believes the region to be uninhabitable by man. By the geological formation of the islands, which seem to be of volcanic origin, the explorer was reminded of the north-east coast of Greenland. A third and final sledge-journey was made by which the north-west coasts of McClintock Island were visited. The sledge-expeditions began on March 10, 1874, and ended May 3d, during which period a distance of four hundred and fifty miles was traversed.

While these expeditions were being made, the ship was all the while fast in the ice; and as there seemed no prospect of getting free, it was resolved to abandon her. To remain another winter with the hope of further discoveries, would have been, under the circumstances, a very great risk. Provisions were becoming scant, and the physical condition of the men, so severely tried by the two winters already passed amid the ice, was far too low to make it safe to face a third. And all

now felt that they could return to their country at least with honour. The *Tegetthoff* was abandoned on the 20th of May 1874, and the return journey to Europe began. But the dangers and hardships of the explorers were by no means yet over. The progress southward, now in the sledges, now by boats, was toilsome, painful, and slow in the extreme. To convey a conception of this it is sufficient to state that 'after two months of indescribable efforts, the distance between us and the ship was not more than two German miles;' a space that would be equal to about nine English miles. Does not this rate of progress correspond in a striking degree with the experience of our own recent Arctic expedition in traversing the terrible 'sea of ancient ice?' But had the ice of the Novaya Zemlya seas remained much longer as formidable as it did to the sledge-parties of Commander Markham and his colleagues, the Austrian expedition party must have one and all perished. But fortunately, at the end of two months' travelling, and when the men had almost begun to despair, 'leads' unexpectedly opened up in the ice; and after one more month of sledging and boating, the open ocean was reached in 77° 40'; an unusually high latitude. Ultimately the party were picked up, as they had hoped for, by a Russian fishing-vessel, off Cape Britwin, minus one only of its members, poor Krisch the engineer, who had died of consumption shortly before the abandonment of the ship.

The literary skill with which the writer of these volumes has told the story of the Austrian Arctic Expedition is quite equal to the best of similar narratives by any former Arctic explorer. He describes the really wonderful fortunes of the expedition, through all its many vicissitudes and perils, simply and modestly, yet with great vividness and realistic power. His story purports to be no more than a popular narrative of what Austria has accomplished in Arctic discovery; but it is really more than this. In addition to their interest as a record of courageous enterprise and patient resolution and endurance in the face of the most excessive hardships, the volumes possess a distinct scientific value; for their author is an accomplished man of science, as well as a brave navigator and explorer. In a portion of the introductory chapters, Lieutenant Payer treats at length and with great clearness the various theories that have at different times been put forward as to the existence of an open Polar sea. He unhesitatingly concludes that no such sea exists; a conclusion which agrees with the actual discoveries of our own Arctic expedition. From this opinion, however, his colleague Commander Weyprecht, dissents, as does also the eminent German geographer Dr Petermann. 'The Pole impracticable;' such was the brief telegraphic summary with which the announcement of the return of the *Alert* and *Discovery* was heralded. But Captain Nares has since modified this expression. He wishes it to be understood that all he means to affirm is, that the Pole is impracticable by the route taken by the *Alert* and *Discovery*, and with the present existing scientific appliances.

Impracticable the North Pole may perhaps ever remain, if the state of the ice encountered by our expedition and by Lieutenant Payer be its normal one. But of this we have as yet no certain proof; not yet, in spite of our author's well-reasoned conclusions, that in some seasons an open sea may not

exist. Some of our readers may remember that the American expedition in the *Polaris*, under Captain Hall, found open water where the sledging-parties of the *Alert* and *Discovery* found only vast ice masses of a hundred and fifty feet in height. It appears to us then that nothing dogmatic can be said on one side or the other in respect to this question.

One other point raised by Lieutenant Payer is deserving of note, which is, that in all Arctic exploration there are two objects to be considered, and that these are distinct, and not, as has been too often supposed, identical. These are—the 'reaching of the North Pole,' and 'the exploration of the Polar regions.' The former appeals more to the imaginative and romantic side of our nature; but Lieutenant Payer takes a broader view of the question. He believes, in conjunction with Commander Weyprecht, that the Polar regions afford special facilities—greater perhaps than any quarter of the globe—for observations of natural phenomena—magnetism, the aurora, &c.; and for the study of geology, zoology, and botany. In short, while not undervaluing the importance of geographical discovery, he holds that the prime object of future Arctic expeditions should be the increasing of our knowledge of natural phenomena, for the observation of which these northern regions offer such great advantages.

A CURATE'S HOLIDAY.

IN FOUR CHAPTERS.—CHAPTER IV.

It was not long past noon when I alighted before the door of the *Ship and Anchor* at Lleyrudrigg. But instead of entering that inn, I waited merely until Jonathan had driven the dog-cart to a stable-yard round the corner, and then walked away at a quick pace towards the beach. Arrived there, I collected a number of fishermen whom, in accordance with my anticipations, I found loitering about the sands, and told them my story. I did so in as clear and succinct a manner as possible, commencing with an account of Mr John Williams's suspicious conduct, and proceeding in regular order to its termination. The narrative, however, was frequently interrupted by excited exclamations from the sturdy Welshmen, and its progress considerably delayed by the necessity for interpretation to those amongst them who did not understand English. By the time it was finished quite a small crowd had gathered around me; and when finally I made an appeal for assistance in rescuing Mr Morgan from his dangerous situation, a dozen stout fellows volunteered to accompany me to the spot. Thanking them with no hypocritical cordiality, I inquired, albeit with some doubt, whether conveyance for so large a party could be obtained in the village. Unhesitatingly a chorus of voices assured me in reply that the best and speediest method of returning to the Spike Rocks would be by sea—one of the sailors adding the agreeable intelligence, that with wind and tide both in our favour as they were at present, we might hope to reach them in little over an hour.

The suggestion meeting, as I need scarcely say, with my delighted approval, a friendly contention ensued as to which of the fishing-smacks offered by their respective owners for the purpose should have the honour of making the little voyage. But

hastened by my impatient entreaties, the question was quickly and amicably settled; and the anchor of the selected vessel having been weighed, I embarked along with my rough but kindly natured companions. As might be expected, all conversation during the short sail turned exclusively on the one theme, and over and over again I was called upon to repeat to those of the fishermen not engaged in working the vessel, portions of the tale I had already related. But the information was not all on one side, since for my part I learned from my seafaring associates one or two very significant facts—the chief amongst them being that the owners of Spike Rock Farm and of the *Ship and Anchor* inn were brothers; and that two other gentlemen who had visited the Spike Rocks, after staying at the hotel in Lleyrudrigg, had also mysteriously disappeared from that neighbourhood. With light thrown upon the matter by the former of these facts, I now understood how it was that the farmer's physiognomy had impressed me as familiar—the resemblance between the brothers, though not very striking, being quite sufficient to account for it—and by the latter I was, if possible, more thoroughly convinced than ever of the diabolical premeditation with which the intended murder had been committed.

The sailor who had made it proved to be not far wrong in his calculation as to the length of time it would take to reach our destination. Exactly one hour and a quarter after quitting Lleyrudrigg we landed, with some difficulty, a little beyond the bird-haunted crags, and at once started, almost at a run, for the farther of the two 'Devils' Holes,' the seamen, by my direction, carrying with them a coil of strong rope. But although upon attaining it, we all shouted in concert, urging my reverend friend to make some sign from his place of concealment, no response was given to the summons. And when time after time it had been repeated without other result than a series of echoes, loud enough to be heard above the din of the restless waters below, I could see some of the men beginning to look at me askance; then gradually upon the faces of one or two the air of questioning doubt gave place to an angry scowl; and from certain low mutterings which reached my ear, I gathered that an impression was beginning to be formed that I was either mad, or that I had mischievously brought them upon a fool's errand.

Determined at once to alter this state of affairs, I adopted what, with my sensitiveness to giddiness, was certainly a bold measure. Requesting that the rope might be fastened about my waist, I directed my companions to lower me to the spot in which I asserted that I had seen the minister. Reassured by the confidence implied in this step, the men obeyed; and accordingly, I shortly found myself swinging within that awful chasm, with the rope vibrating to and fro, and a deafening roar coming up from beneath. Presently my feet touched the slanting granite shelf described in the previous chapter, and immediately I felt them slip from under me; then, as the rope paid out with a jerk, I slid downwards through a narrow opening into a minute cave in the rock, and lay there for a few moments stunned by the violence of a blow which my head had received in the fall. Upon recovering consciousness, I found myself resting upon the body of my friend;

and moving so as to obtain a view of his face, I soon discovered why there had been no reply to our reiterated calls.

The little minister—I saw it with deep thankfulness—was still alive, but his ears had been rendered obtuse by the delirium of a raging fever. His eyes, wide open, were fixed upon the roof of the tiny cavern, and though, upon my addressing him, they wandered during several seconds over my countenance, it was without the slightest sign of recognition. He commenced a rigmarole of rambling disconnected sentences, at all times painful to hear from the lips of the poor sufferer from a perturbed brain, but which, uttered in that weird and awful place, was naturally invested with double horror. My fingers trembling in the attempt, I now hastened to undo the rope from about my own person, in order that I might secure it round that of Mr Morgan. But owing to the opposition offered by the unconscious man, the task proved to be one of no small difficulty. At length, however, it was accomplished; and signing to those above to draw in the rope, I gently guided the body of the little Welshman through the entrance to the cavern, noticing as I did so that his right leg was fractured and terribly swollen. Not caring to witness the perilous ascent, I remained within the cave until a loud 'Hurrah!' proclaimed his safe arrival upon *terra firma*. Then scrambling out, I watched the rope re-descending, once more adjusted it round my waist, and in a few moments afterwards was kneeling by my friend's side upon the grass, and at the request of the excited fishermen, searching his pockets for the huge wash-leather purse of which I had spoken to them.

Its absence, as well as that of his watch and chain, appeared to settle beyond question in their minds the fact that there had been foul-play; and a motion emanating from one of their number that we should take the law into our own hands, and proceed to arrest the farmer and his family, was unanimously carried.

Accordingly, leaving Mr Morgan under the care of a couple of the elder men, we adjourned in a body to the Spike Rock Farm; but only to find it, to our extreme mortification, entirely untenanted. Evidences, however, of hasty flight existed in such abundance, that we could not but conclude that its late inmates had only just departed. And confirmation of this supposition was not wanting; for one of the sailors, gazing from an upper window, presently espied, far down the winding lane up which I had yestere'en driven, a mass of heads progressing rapidly, but with a jolting kind of motion, as though their owners were being carried along in a spring-cart or some such vehicle. Drawing the obvious inference that our large party must have been seen by the criminals, surrounding the supposed grave of their victim, and that conscious guilt having excited their alarm, they were now endeavouring to escape from the justice which would follow detection, we consulted with each other as to what it were best to do. The result of the conference was a decision to take the vessel farther round the headland, to a small town where better accommodation could be found for the sick man than at Lleyrudrigg, and in the vicinity of which was a station of coast-guardsmen. This resolution being promptly carried out, Mr Morgan was conveyed upon landing to a comfortable hotel, where a physician was speedily

procured to attend him; and accompanied by my corps of witnesses, I proceeded to lay before the proper authorities a full statement of the events I have described, and to place the case in their hands. Then bestowing upon my quondam companions a good dinner, and promising to obtain for them a reward for their services, which I was myself unable to afford, I walked with them to the landing-stage, and saw them off upon their return voyage. A message directed that same afternoon to Mrs Morgan, Pwlwyn, brought with great celerity to the side of the little minister the tenderest and most devoted nurse in the world; and before many days, he was so far recovered as to be able to supply any further testimony which was wanting for the conviction of his intending murderers. Such testimony, however, had by that time become almost unnecessary, since upon being captured (as they had been with prompt despatch), the youngest of the culprits had consented to earn a pardon by turning king's evidence. By this lad's confession it was now clearly proved that the minister's glass of spirits had, as I had suspected, been heavily drugged, that his three hundred pounds had been stolen, and that he himself had been cast into the 'Devil's Hole;' and from the same source it was also ascertained that two other gentlemen—one of them a jeweller, known to be travelling with valuable diamonds in his possession—had by Abel Williams, owner of Spike Rock Farm, and his two eldest sons, and at the instigation of John Williams of Lleyrdrigg, been done to death by being precipitated into the same chasm.

At the following summer assizes, Abel, Robert, and Thomas Williams were condemned to suffer the full penalty of the law; Jonathan Williams the hunchback and the farmer's remaining sons received sentences of imprisonment of more or less severity; whilst to the landlord of the *Ship and Anchor* was awarded the well-merited punishment of transportation for life.

A few sentences will now suffice to complete my story. At the urgent request of the good couple, to whom I had become sincerely attached, and to whom indeed my services for the journey were, I thought, almost indispensable, I consented to return with them to their home. I did not, however, when giving that consent, intend to remain longer than one evening at Pwlwyn—my leave of absence from my duties having long since expired. But strange to say, when a full week had elapsed I was still lingering in that small and in itself unattractive Welsh village; and it was not until an entire change in my sentiments and in all my prospects for life had been wrought by my visit, that I eventually left it for Ollyhill.

During the time she had spent at the hotel whilst engaged in nursing her husband, and especially when upon the way home, Mrs Morgan had made frequent allusion in my presence and in terms of the highest praise to a certain young cousin under whose charge she had left her house and children. But little did I dream that that cousin—the *Lily* whose name I had so often heard repeated—was my *Lily*—*Lily Thornton*! Such, however, upon arriving at Pwlwyn, I found to be the case; and in the surprise and uncontrollable joy of that unexpected meeting, I knew that I, in fact that both of us, had betrayed ourselves. Then followed days full of a bliss so sweet, that resolve as I would, I could not forego it, when in the delightful

consciousness of tacitly confessed love, *Lily* and I wandered forth together, seeking the shady woods and conversing in confiding tones—principally about nothing. At length there came a certain sunny afternoon when, seated side by side upon a rustic bridge, we bent in silence over a little babbling stream, our heads coming into closer and closer proximity, until in the end, with a sudden movement, 'our spirits rushed together in the meeting of the lips.' After that, as any person of the slightest experience in such matters will readily believe, it was—to use a slang phrase—all up with me. I left that bridge an affianced man; and upon returning to Ollyhill I resigned my curacy; and upon receiving Squire Thornton's somewhat reluctant consent to my engagement with his daughter, I obtained a situation in a mercantile house in Liverpool, the principal of which was an uncle of my intended bride. With indefatigable industry I laboured for two years to earn for myself a good position; and at the close of that time took to my bosom, for weal or woe, the wife for whose sake I had quitted the Church and joined the Merchants' Service.

In conclusion, the events I have here faithfully related, involve a virtue which every one ought to endeavour to practise—the virtue of Presence of Mind. In cases of sudden peril, a moment or two of calm thought on the part of *one* person, has frequently been the means of saving not only his own but the lives of his fellow-creatures. In the case of a theatre on fire, or in a runaway carriage, he (or she) who has the presence of mind to sit still, has the best chance of saving his (or her) life. In my case, feigning sleep probably saved mine.

TOY-LAND.

In a romantic and beautiful district of the Southern Tyrol, at no great distance from the town of Botzen, stands the flourishing village of St Ulrich. It is indeed more a small town than a village, and extends itself widely along the right bank of one of those rushing streams that dash through nearly every valley, and are fed by the melting of the snow on the lofty mountain-ranges of the neighbourhood. It contains several good and comfortable inns; and boasts of two churches, one of which is old and small; the other new and large, and handsomely carved and decorated outside, while in the interior, besides some richly painted windows and a good altar-piece, there is a great variety of statues and small figures, all of wood, most of them very delicately carved, and many of them, as well as much of the internal ornamentation of the church, tastefully gilt and coloured. This wood-carving is indeed the staple manufacture of the place, and has raised it to its present condition of evident prosperity. There are no signs of poverty anywhere visible; the people look healthy, happy, well fed and well clad, and their houses roomy and clean. Let us see how this pleasant state of matters has been brought about.

Wood-carving is the chief occupation of many a mountain village both in the Tyrol and in Switzerland; but in no place has it been carried to greater

perfection or been entered into more thoroughly by the inhabitants than at St Ulrich. One branch of it indeed, the manufacture of wooden toys, particularly dolls, may be considered almost a speciality of the district; for the little town of St Ulrich is the great storehouse from which the chief toy-traders of Europe, we might almost say of the world, draw those rich and inexhaustible supplies which brighten so many nurseries and gladden the hearts of so many little ones. The art is said to have been introduced into the valley about the beginning of the last century, since which time it has been the principal employment of the inhabitants, male and female, young and old alike; for ancient grandfathers and grandmothers may be seen steadily pursuing the vocation that has been theirs from their earliest years; and as soon as the little boys or girls can be safely trusted with knives, they begin their rude endeavours to carve the form of some animal or toy which is the peculiar line of their family. This is one of the odd things in connection with the trade, that, as a general rule, each family or group of families has its own special department, from which they do not deviate. Some carve, some paint, some gild; the painters often working only in one particular colour; while the carvers constantly stick to the manufacture of one or two, or at the most of half-a-dozen animals, of certain toys or certain portions of toys and dolls, and so on through all the endless ramifications of their Lilliputian industry.

It is a most curious sight to watch them at work. They use no models, and work entirely by rule of thumb; long practice having made them so perfect that they turn out the tiny articles without the slightest hesitation, every one as precisely alike as if they had been cast in a mould. In this way are manufactured the varied collection of animals found in a Noah's Ark. Some families will cut out lions, tigers, camels, and elephants; others, sheep, oxen, and deer; others, chiefly birds; while another group will produce the wonderfully dressed little men and women popularly supposed to represent Noah and his seven human companions. The colouring of these productions is quite another branch of the trade; and while the carving goes on at all times with unabated regularity, the painting of the various articles is only added as they are required; that is, when orders come from the toy-dealers; and this frequently varies according to circumstances; so that the colouring and gilding business is not on the whole so steady and profitable as the carving.

There are several shops and warehouses where the articles thus manufactured are sold; but there are two leading merchants who act as wholesale exporters, buying the carved work either from the people themselves, or from minor agents, who realise a small profit by acting as middlemen. Permission can readily be obtained to visit these establishments; and it is a curious and amusing sight to walk through their vast repositories, and inspect the extraordinary collection of dolls and toys gathered together under one roof. The dolls are in themselves a very wonderful exhibition. There are rooms upon rooms quite filled with them, of every size and style, small and large, painted and unpainted; their size varying from tiny atoms scarcely an inch long, to huge figures of nearly a yard in length, most of them jointed,

and the greater part uncoloured, and just as they came from the hands of the carver. They are carefully sorted according to their various sizes; and great shelves and cases in every direction are crammed with them. Some sizes are more popular than others; a very favourite length being about two inches; of this size one of the great doll-merchants of St Ulrich buys thirty thousand every week during the whole year! The makers of this kind can turn out about twenty dozen a day, each skilful worker; the painting being quite an after concern, with which the carvers have nothing to do. Here also are bins filled with wooden animals, also of different sizes and different degrees of excellence; for while some are merely roughly shaped and the production often of very young children, others are carved with very great care and dexterity, and are faithful representations of the creatures they are intended to imitate. All the numerous toys with which we are familiar in the shops, or which we have played with in childhood, here first spring into being. Noah's Arks, empty and full; armies of wooden soldiers on horseback and on foot; farmyards of various dimensions, stored with every article needful for the juvenile agriculturist; dolls' furniture of every shape and pattern; sets of tea-cups and saucers, and all kinds of domestic utensils; little wooden horses, little wooden carts. In short it is toys, toys everywhere; and even with all our experience of the capacity of children for acquiring such possessions, it is really difficult to credit the fact that this enormous manufacture and unceasing distribution go on, like the poet's brook, 'for ever.'

Quitting the premises, the visitor is still pursued by the prevailing occupation. Carts are coming and going, all carrying the one universal load—toys; while at every cottage door are seated some of the inmates, busily engaged with their own special branch of the trade; mothers singing to the children on their knee while they yet deftly carve a cow or a goat; old men and women whittling away, the ground at their feet strewn with the chips and shavings; and quite little boys and girls gravely cutting the portions intrusted to them, and soon acquiring a skill which enables them to add materially to the family gains. The men are usually employed on carving of a higher class, chairs, boxes, brackets, or on the superior quality of toys; as well as on that special branch which has attained very great perfection in St Ulrich, the cutting out and ornamentation of crucifixes, figures of Christ, the Virgin, and the Saints, and of numerous other articles employed for the decoration of churches and sacred buildings.

As we have already said, it is an interesting sight to watch the people at their work. They are very willing to gratify the curiosity of visitors, and will readily communicate all the information in their power regarding their trade and its emoluments. The trees from which the different articles are made are a soft kind of pine, very easily cut and worked. They grow in abundance in the district, and are the main source of its prosperity. But with this prosperity the steady and industrious habits of the people themselves have also much to do. The youngest members of a family begin to work as soon as they are able to do so; and this regular occupation is continued through

life till the trembling fingers can no longer hold the carving-tools.

As a rule the inhabitants of St Ulrich are simple and domestic in their tastes; they are fond of flowers, and their little gardens are carefully cultivated, and gay with bright colouring. As yet their isolated position, remote from the track of the ordinary tourist, has preserved them from many of the hurtful follies and vices too often found in more frequented districts, and but few of the villagers have ever passed beyond the bounds of their own secluded valley. And yet this little hamlet has a world-wide reputation. The toys of St Ulrich have delighted generations long passed away; they are to be found in palace, hall, and cottage; in the populous cities and quiet country homes of Europe, in far-distant nurseries of Asia and America; and in all probability they will continue to be poured forth in inexhaustible profusion when this and many a succeeding generation have gone from the whirl and bustle produced by the less innocent toys and amusements of maturity, to that silent land whose shadows are still deeper than those of the dark and majestic pine-trees that close in round the little valley of St Ulrich.

THE MONTH:

SCIENCE AND ARTS.

WE have more than once mentioned the Australian 'gum-tree'—*Eucalyptus*—and the remarkable properties by which it checks malaria and the noxiousness of marshes. Dr Angus Smith, F.R.S., whose valuable paper on Peat-bogs we noticed a few months since, believes that the neighbourhood of Rome, the malarious, unhealthy Campagna, might be rendered habitable by large plantations of the eucalyptus. He has visited the locality, and saw an experiment on a small scale, about four miles from Rome, which appeared to be satisfactory. 'As one enters the garden,' he says, 'there is a peculiar odour perceptible: it is fragrant, pleasant, and resinous; some compare it to that from turpentine, some to the black currant; but every one attempts to give the name of some other odour as evidently mixed with this more prominent one. . . . This experiment shews that men may live in health in one of the worst parts of the Campagna with proper precautions. Instead of a neglected country with scarcely a house, it might be a pleasant habitation, as it once was, for many thousands. . . . We are informed that the tree itself with its exhalation is quite sufficient to render a district healthy; and it is perfectly certain that if the oil is efficacious, and the evidence gives faith, those who live near must be continually taking in doses which must soon equal in amount that usually given as a cure. They must in fact be living in a constant vapour of this healing oil.' More on this interesting subject may be found in the *Proceedings* of the Philosophical Society of Manchester, vol. 15.

At the last annual meeting of the Royal Cornwall Polytechnic Society (Falmouth) there was, as usual, an interesting display of works of art and mechan-

ical inventions, and prizes were offered which may, perhaps inspire further inventions. As examples we mention five hundred pounds for the best boring-machine applicable to Cornish mines: fifty pounds 'for the discovery of a new mineral in Cornwall or Devon likely to become commercially valuable;' and 'for a method, mechanical or chemical, of making marketable, with commercial advantage, ores or minerals produced in Cornwall or Devon, and hitherto regarded as worthless, or of little value.'

The so-called diamonds in the Diamond Rock Drill are in reality carbonite, a mineral found in Brazil. When first offered for sale, the price was fourpence a carat; now it is from fifteen to twenty shillings. These pieces of carbonite being firmly set in a 'crown,' form a drill which, when driven by steam, will pierce the very hardest of rocks. According to the nature of the rock, the progress will be from one inch to two and a half inches a minute, which in ten hours would amount to a considerable number of feet. The wear of the carbonite is so small that in boring quartz, which is not a soft rock, to a depth of thirty feet, not more than one sixty-fourth of an inch would be worn off. The dangerous reef in the estuary of the Tees is in course of removal by means of the diamond drill. Holes are bored; blasting charges are inserted; the rock is blown to pieces; two thousand tons a day are lifted by a dredger; and the total cost for all this is not more than four shillings a cubic yard.

Mr Handyside exhibited at the Cornish meeting above mentioned a locomotive which will ascend steep slopes of one foot in ten, or one in eight if required, and therefore may be turned to good use in a hill-country. The Brenner Railway, by which trains cross from Tyrol into Italy, has a rise of one foot in forty: on railway lines generally one foot in eighty may be taken as an available gradient: hence it will be understood that a locomotive able to run straight up hill without miles of zigzag will admit of much economy in railway construction. This new locomotive has, at its rear, a drum wound round with a chain, and is provided with self-acting grips, which descend at the proper moment, and biting the sides of the rails, after the manner of a vice, so fix the locomotive to the spot that it becomes a stationary engine. Some of the wagons are fitted with similar grips, to prevent the train from running back during the ascent. When preparing to mount a hill, the free end of the chain is made fast to the foremost wagon; the locomotive moves on the whole length of the chain and fixes itself; the drum begins to turn, and by winding up the chain, hauls the train up; and this process is repeated until the hill-top is reached.

Here then is a new appliance for the engineering profession. Its capabilities have been proved, as stated in the Report, at the new Avonmouth dock, where a Handyside locomotive has hauled the excavated material from the bottom of the basin, and deposited it wherever required for filling on the top.

Other advantages possessed by this locomotive are: that it can be used with rails much lighter, and consequently less costly than those in general use; that the drum and chain facilitate the passage of curves; that a train of coal-wagons may be close

coupled as a passenger train; and that its break-power is complete, and being applied to the sides of the rails, does not injure the surface that bears the traffic.

We are informed that a steam tram car has been invented at St Louis, United States, which travels seven miles in fifteen minutes. The boiler, cylinder, coal-box, and water-barrel are ingeniously planned to occupy as little space as possible; and the inventor states that 'under ordinary circumstances the cost of fuel will not exceed three shillings a day.' For further particulars, inquirers must write to St Louis.

On looking at a map, one often feels a desire to tell off-hand the distance between two places. Among the instruments exhibited at Falmouth, Morris' Patent Chartometer, which may be carried in the pocket as easily as a watch, will enable any one to get the desired information. The 'works' of the chartometer are moved by a wheel projecting on one side. To measure any distance on a map, we are told it is only necessary to hold the instrument upright, and run the wheel along the line between two places, or the course of a river, or the sinuosities of a coast, and the indicating fly denotes the number of miles or parts of a mile. The distance is shewn at once, without the trouble of calculation, which is an important advantage. A Patent Measuring Instrument, by the same maker, is described as 'somewhat similar in character, being run along the surface to be measured. It measures up to one hundred feet; and is of the size of an ordinary watch.'

The practice of using leather belts for transmission of power in foundries and factories, which prevails largely in the United States, has been imitated in Lancashire and Yorkshire with satisfactory results. With belts there is less noise and less vibration than with iron shafting and bevelled wheels; the walls of the building are consequently not weakened by perpetual shaking, and diminution of roar and rattle cannot fail to be a benefit to all concerned. Nevertheless leather belts are costly articles, and if hemp could be substituted for leather there would be a saving of two-thirds of the cost. This has been proved in Dundee, where in one of the factories (Messrs A. & J. Nicholl's) rope-gearing is used for transmission of power to all parts of the building, and during an experience of five years, has given full satisfaction. The size of the ropes varies with the work required; the largest, in the instance here under notice, being six and a half inches circumference. The power is communicated directly from the fly-wheel, the rim of which, instead of cogs, is filled with circumferential V-shaped grooves. The 'life' of a rope is said to be from three to five years, though some ropes last much longer; which considering that they travel from three thousand to six thousand feet per minute, may be regarded as long enough.

The *Proceedings* of the Institution of Mechanical Engineers contains a description of Frisbie's Mechanical Fire-feeder—a contrivance which economises fuel, increases heat, and saves trouble when applied to the fireplace of a steam-engine or furnace. Underneath the fireplace is a mechanism which carries a movable hopper; the hopper is filled with coal, and by the turning of a winch, is raised until the fresh coal is pressed against the bottom of the fire. The smoke, having to rise through an existing

fire, is nearly all consumed; and the pressure from below breaks up the clinkers, and causes them to fall away to the circumference of the fireplace, from any part of which, as the bars are made to rotate, they can be easily removed. Among the advantages of this method are: that 'the fire is not reduced in intensity by the cold fuel damping the flame,' as is the case in fireplaces of the usual construction: that 'each successive charge of fuel lifts up and most effectually pokes the fire:' that 'the cooling of the furnace by the admission of a large volume of cold air when the fire-doors are opened for stoking, is avoided;' and that 'a smokeless flame is readily attainable with a thick fire, although using smaller fuel than can be employed in ordinary furnaces.' Accepting this information, it is not out of place to mention that the furnace by which steam is generated for driving the machinery by which this *Journal* and our other works are printed, is fed upon a somewhat similar principle. Small coal (dross) is placed in a hopper at the near end of the furnace, and rests upon and is gradually carried into the interior and on to the far end (where it is dropped as clinkers) by closely connected parallel bars which traverse the furnace from end to end and slowly revolve round a 'drum.' The strength of the fire is regulated by a door, which may be raised or lowered by a winch, to admit of a greater or less supply of fuel, as necessity may indicate. The result is that combustion *begins* at the near end of the furnace, the smoke is consumed before it can reach the flue, a steady fire is maintained without admitting an unnecessary amount of cold air or necessitating the constant attendance of a fireman, and the economical desideratum of a perfect smoke-consuming apparatus is achieved. The apparatus goes by the name of Jukes' Patent, and has been in constant use for over twenty years. In comparison with ordinary furnaces, a saving of seven per cent. of fuel is effected. Why this patent apparatus for prevention of smoke is not in universal use, we cannot explain.

A curious fact was mentioned at a meeting of the Institution of Mechanical Engineers (Newhall Street, Birmingham). The boiler of a locomotive engine that had been working on a branch of the London and North-western Railway near London had become very foul through the constant use of hard water. Recourse was then had to a supply of water which had been softened, 'and at the end of a month the boiler was perfectly clean. The soft water had taken out the whole of the deposit, and not a handful of scale could be got when the boiler was washed out.'

Another fact: the water of a well at Camden Town (London) was so unfit for locomotive purposes that it could not be kept in the boilers on account of priming. 'To get over the difficulty, the railway company arranged with the canal alongside, by putting down a double acting-pump with separate outlets and inlets, so that in one stroke the pump would have a measure of water from the canal and put it into the tank for the locomotives, and the return stroke would take the water from the well and put it into the canal.'

Many attempts have been made to turn kite-flying to practical uses, but with scarcely any other result than to shew that in the art of kite-flying we are far behind China and Japan. Success depends on the shape of the kite; and if a kite

presents a flat surface to the wind, it will be unsteady, and cannot be employed in a successful experiment. The proper form for a kite is that of a hemisphere with the convex side to the wind: no wings and a light tail. The string should be fastened a little above the centre. A kite thus constructed will, as is stated by Dr Joule of Manchester, 'stand in the air with almost absolute steadiness. He found that by pulling strings fastened to the right and left sides of the horizontal bow, the kite could be made to fly thirty degrees or more from the direction of the wind, and hence that it would be possible to use it in bringing a vessel to windward. One great advantage of such a mode of propulsion over ordinary sails would be that the force, however great, could be applied low down, so as to produce no more careening than that desired by the seaman.'

Another measuring instrument likely to be useful to engineers, architects, surveyors, and travellers who require to measure the heights of buildings, trees, cliffs, or hills, in some instances difficult of approach, has been described by Mr Laslett at a recent meeting of the Institute of British Architects. It is the 'Metroscope,' 'an instrument for measuring inaccessible heights and distances, and for levelling.' To be able to measure the width of a river, or the height of a tower to the very top of the weathercock, is a manifest advantage, which is further increased by the instrument being provided with a scale, on which the measure can be read off in feet and inches, or feet and decimals. To give a clear idea of the construction, diagrams would be necessary; and it must suffice here to say that it combines adjusting screws, spirit levels, reflecting mirrors, and a telescope; as may be seen by any one who will call at Pastorelli's, 208 Piccadilly, London.

The third volume of the Report on the Geological Survey of Victoria (Australia), by Mr Brough Smyth, has been published. It furnishes interesting information concerning the surveys going on in different districts—the several goldfields—the volcanic rocks—the palæontological remains—the various methods of treating auriferous pyrites—the gold found in the water of mines—the mineralised woods, and precious stones. Apart from its scientific statements, the book is valuable for the historical particulars it gives of the discovery of gold, and of the 'rushes' of enthusiastic diggers. The total amount of gold produced up to 1875 exceeds L.182,000,000 sterling. Announcements of discoveries of minerals are often made for speculative purposes, and the process of 'salting' appears to be as well understood in Victoria as in Nevada; and in one instance a rumoured discovery of coal—a seam of lignite—proved, on examination by a government geologist, to be a trick: the specimen lumps had been ploughed in.

A line of telegraph from one end of Africa to the other is talked of. From Alexandria to Khartoum, 1100 miles, a wire is already erected, and is to be carried on to Gondokoro. From this place to the northern termination of the South African lines stretching from Cape Colony, the distance is about two thousand miles; and it is thought that to erect and maintain a line across that wild region would not be more difficult than it was to carry a line across the great continent of Australia. Travellers in the interior might then flash their messages to Cairo or Cape Town at pleasure.

LINES TO A LATE-BORN MOUNTAIN LAMB, ON A BLINK OF SUNSHINE IN WINTER.

Wae lammie, on yon Scottish hill,
Sport while ye may, and tak your fill
O' this bit glint o' simmer still,
Puir feckless¹ thing;
Winter a routh² o' cauld and chill
Too soon will bring.

Sport while ye may, my bonnie fay;
'Twill last na lang this autumn day;
For sour and dour,³ without delay
Auld Winter's bound
His heavy hand o' skaith⁴ to lay
On all around.

Unsheltered on the bare hill-side,
The sleety storm is sair to bide;
Caught in its arms, O wae betide
The hapless hour!
In thy sair stress, whar will ye hide
Frae its fell power?

What tho' the snaw-wreath cover thee!
An' frosty hand shall close thy e'e,
Thy young life in adversity
Thus pass awa;
'Tis surely best thou shoud'na dree⁵
What might befa'.

I wadna hae ye like to me,
Aye fu' o' care for what may be,
Thy glad hour clouding waefully
Wi' threatened ill;
Rather wi' careless thoughts and free,
Thy bright hour fill.

We look behind! wae worth the day!
Aft miry path and feet astray,
Our guiding light a flickering ray,
No frae aboon—
An ignis-fatuus 'mid decay
And earthly gloom.

How aft wi' heart's ain dool⁶ oppress;
How aft wi' ithers' pain distress;
How attimes pained, how seldom blest;
Joy's fairest bloom
Grows on a slender stem at best,
A touch its doom!

We come but with a fretfu' cry,
A wailfu' note to trouble joy;
We go, and Nature's agony
Doth still attend;
The sinking heart, the weary eye,
Proclaim the end.

We look beyond, and there we dreed!
Frae folly shall we e'er be freed?
We hope, we trust, that there indeed,
In time to come,
We may attain the heavenly creed,
And leal become.

And there, my lammie, like to thee,
Passive and pure, nae mair to be
Assailed wi' doubt or fear that we
Shall lapse or fa',
But evermair frae trouble free,
And earthly thraw.⁷

¹ Weak. ² Plenty. ³ Stubborn. ⁴ Harm. ⁵ Endure.
⁶ Grief. ⁷ Pain.